IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of
Inventor(s): HOTAKAINEN et al.

Appln. No.:	10	082,357
	Series Code ↑	↑ Serial No.

Group Art Unit: 2681

Filed: February 26, 2002

Examiner: Not Yet Assigned

Title: MANAGEMENT OF LOCATION INFORMATION

Atty. Dkt.	P 290676	2990620US/Pg/kp
	M#	Client Ref

Date: April 19, 2002

SUBMISSION OF PRIORITY DOCUMENT IN ACCORDANCE WITH THE REQUIREMENTS OF RULE 55

Hon. Asst Commissioner of Patents
Washington, D.C. 20231

Sir:

Please accept the enclosed certified copy(ies) of the respective foreign application(s) listed below for which benefit under 35 U.S.C. 119/365 has been previously claimed in the subject application and if not is hereby claimed.

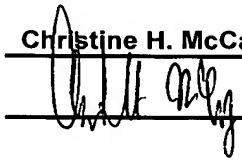
Application No.	Country of Origin	Filed
19991861	FINLAND	September 1, 1999

Respectfully submitted,

Pillsbury Winthrop LLP
Intellectual Property Group

1600 Tysons Boulevard
McLean, VA 22102
Tel: (703) 905-2000

By Atty: Christine H. McCarthy **Reg. No.** 41844

Sig: 

Fax: (703) 905-2500
Tel: (703) 905-2143

Atty/Sec: CHM/JRH

PATENTTI- JA REKISTERIHALLITUS
NATIONAL BOARD OF PATENTS AND REGISTRATION

Helsinki 5.2.2002

E T U O I K E U S T O D I S T U S
P R I O R I T Y D O C U M E N T

Hakija Applicant	**Nokia Telecommunications Oy** **Helsinki**
Patenttihakemus nro Patent application no	**19991861**
Tekemispäivä Filing date	**01.09.1999**
Kansainvälinen luokka International class	**H04Q 7/38**

Keksinnön nimitys
Title of invention

"Management of location information"
(Sijainti-informaation hallinta)

Hakijan nimi on hakemusdiaariin **05.12.1999** tehdyn nimenmuutoksen jälkeen **Nokia Networks Oy.**

The application has according to an entry made in the register of patent applications on **05.12.1999** with the name changed into **Nokia Networks Oy.**

Hakemus on hakemusdiaariin **04.02.2002** tehdyn merkinnän mukaan siirtynyt **Nokia Corporation** nimiselle yhtiölle, **Helsinki.**

The application has according to an entry made in the register of patent applications on **04.02.2002** been assigned to **Nokia Corporation, Helsinki.**

Täten todistetaan, että oheiset asiakirjat ovat tarkkoja jäljennöksiä patentti- ja rekisterihallitukselle alkuaan annetuista selityksestä, patenttivaatimuksista, tiivistelmästä ja piirustuksista.

This is to certify that the annexed documents are true copies of the description, claims, abstract and drawings originally filed with the Finnish Patent Office.

Pirjo Kaila
Tutkimussihteeri

Maksu 50 €
Fee 50 EUR

Maksu perustuu kauppa- ja teollisuusministeriön antamaan asetukseen 1027/2001 Patentti- ja rekisterihallituksen maksullisista suoritteista muutoksineen.

The fee is based on the Decree with amendments of the Ministry of Trade and Industry No. 1027/2001 concerning the chargeable services of the National Board of Patents and Registration of Finland.

Osoite: Arkadiankatu 6 A, P.O.Box 1160, FIN-00101 Helsinki, FINLAND
Puhelin: 09 6939 500
Telephone: + 358 9 6939 500
Telefax: 09 6939 5328
Telefax: + 358 9 6939 5328

Management of location information

The invention relates to management and processing of location information in telecommunication systems, especially in mobile communication systems.

Mobile communication systems are typically cellular systems, i.e. the coverage area of mobile network consists of cells, the coverage area of each cell being served by a base transceiver station (BTS) and usually slightly overlapping with neighbouring cells. The whole mobile network is controlled by one or more network management systems (NMS). In order to be able to control and monitor the mobile network, NMS has to know the identification of each cell. Moreover, there may exist cell-specific services in mobile networks. In order to check whether allowed to use these services, mobile stations have to be aware of the identification of cells providing cell-specific services. Thus, the cell identity has to be delivered from the mobile network to mobile stations locating in particular cell area.

In GSM system (Global System for Mobile Communication) each cell is uniquely identified by a CGI code (Cell Global Identity). The CGI code is a standard format of 14 digits, containing Mobile Country Code (MCC), Mobile Network Code (MNC), Location Area Code (LAC) and Cell Identity (CI). The CGI code is formed hierarchically defining the country by the first four digits (MCC), the mobile network by the next two digits (MNC), the location area, i.e. a group of cells determining the location approximately, by the next four digits and the exact cell by the last four digits. Consequently, CGI code is normally used as a cell location information in intra-system communication between the elements of GSM network.

Intelligent networks (IN) have been introduced to mobile communication networks in order to enable quick and flexible implementation of new telecommunication services. INs separate the network intelligence from the physical switching and transport entities of mobile networks through defined protocols and interfaces. Data protocols, messages and data formats used in IN communication are not bound by the mobile network standards, but the mobile network operator may define his own way of processing network data inside the intelligent network. The usual approach is that existing mobile network data is modified in more flexible format to be used in IN. For example, in prior known intelligent networks cell location data is expressed either by the

CGI code as such or by replacing one or more digits from the end of the CGI code by a so called wild card (*). The beginning of the CGI code is always defined exactly by so many digits as required for a specific purpose. For example, a service could be defined for every cell in a certain location area by determining the CGI code in the service definition message as 358f 24 6666 *, where 358f is the value for MCC, 24 for MNC and 6666 for LAC. The wild card (*) after the LAC definition tells that this service definition message concerns every cell in this particular location area. Respectively, by determining the CGI code as 358f 24 6666 1* the service definition message would concern every cell in this location area (6666), of which first digit of CI is 1.

The problem involved with the arrangement described above is the limited usability of the wild card. The prior known INs are designed in such way that a wild card can only be used at the end of the CGI code replacing any number of digits from one to fourteen. A wild card (*) cannot be used in the middle of the CGI code as it would be impossible to tell how many and which digits are replaced, especially if several wild cards are used. Thus it is not possible to define certain parts or digits at the beginning or in the middle of the CGI code as being relevant. However, mobile network related intelligent networks (Mobile INs) comprise several network elements which store, deliver and utilise at least a part of the location information contained by CGI codes. In some cases only a part of CGI codes, for example LAC information, is changed and this change must be updated in several network elements. Because a wild card cannot be used as replacing the LAC part of the CGI code, each CGI code must be transferred and updated as whole, resulting in unnecessary data transmitting and processing, which is always exposed to errors. Furthermore, some future services e.g. in GSM environment will enable direct communication between the elements of the intelligent network and mobile stations. Some of these services involve delivering cell information from the IN to a mobile station, which, according to prior known solutions, would contain the whole CGI code, although the mobile station requires only the CI part of the CGI code. Therefore, the 14-digit CGI code consumes unnecessarily the limited memory of the mobile station. Altogether, the limited usability of the wild card complicates the utilisation of location information in various applications, which would require more flexible approach to processing of location information.

Thus, the object of the invention is to provide a method and means for eliminating the problems described above. The invention is related to a method for processing location information in an intelligent network system connected to a telecommunication system, especially to a mobile communication system, the location information being composed of digits. The method is characterized by

attaching a symbol to each digit of the location information to indicate the relevancy of said digit for the processing purpose and

processing at least one digit of the location information indicated to be relevant according to predefined commands.

The invention is further related to an intelligent network system comprising coupling means for linking the intelligent network system in connection with a telecommunication system, transmission means for transmitting location information between said intelligent network system and said telecommunication system, the location information being composed of digits, processing means for processing and modifying the location information into a form suitable for the intelligent network system, entering means for an operator of the intelligent network system to enter commands for processing the location information and storing means for storing the location information. The intelligent network system according to the invention is characterized in that

said processing means are arranged to

attach a symbol to each digit of the location information to indicate the relevancy of said digit for the processing purpose and

process at least one digit of the location information indicated to be relevant according to predefined commands.

The invention is based on the idea that there is attached a symbol to each digit of the location information, in other words a symbol mask is attached to the location information, which symbol mask is used inside intelligent network for informing which digits of the location information are considered relevant for a specific purpose. The symbols are preferably bits, but also any other symbols, like letters, numbers or special characters, could be used.

An advantage of the method and the IN system according to the invention is that the relevant digits of the location information can be indicated digit by digit. Thus any digit can be defined relevant regardless of its position in the location information and in respect of other relevant digits. Several digits, which do not necessarily have to be in consecutive order, can be indicated

to be relevant. Also digits at the beginning and in the middle of the location information can be either included in or neglected from the relevant digits. Furthermore, the invention provides considerable reduction in the amount of data to be transferred and processed. Another advantage of the invention is that it can be applied to all processing of location information inside the intelligent network. According to a preferred embodiment of the invention, the symbolmask is removed from the location information prior to transmitting the location information to the telecommunication system. Yet another advantage of the invention is that it facilitates the direct communication of location information between the intelligent network and the terminal of the telecommunication system needed in some applications. The transmitted location information can be shortened according to an advantageous embodiment of the invention, consequently reducing the memory consumption of the very limited memory of the mobile equipment or the SIM card.

A more detailed embodiment of the invention can be had from the following description of preferred embodiments given by way of example and to be understood in conjunction with the accompanying drawings wherein:

Figure 1 shows a block diagram of an implementation of an intelligent network in telecommunication system;

Figure 2 shows a simplified block diagram of an implementation of an Mobile IN service application;

Figure 3 shows a table diagram of a preferred embodiment of the invention;

Figure 4 shows an exemplary flow diagram of a preferred embodiment of the invention;

Figure 5 shows another exemplary flow diagram of a preferred embodiment of the invention.

In the following, a reference is made to Fig. 1, which shows an example of how intelligent network can be implemented in telecommunication networks. Intelligent networks implemented in connection with mobile communication networks are usually called Mobile IN networks. The implementation in Fig. 1 should be regarded as an example and it is obvious for a man skilled in the art that the invention can be carried out also in any other corresponding network configuration.

In Fig. 1 the Intelligent Network (IN) is connected to a GSM architecture through a signalling network, which typically supports Signalling Sys-

tem No 7 (SS7). The same IN can also be connected to a wired telecommunication network, like PSTN (Public Switched Telephone Network) or ISDN (Integrated Services Digital Network). In the GSM network SS7 network is connected to Service Switching Points (SSPs), which can be implemented e.g. in connection with Mobile Switching Centres (MSC; not shown). SSPs are IN-capable switching systems, which can detect requests for IN-based services and establish connections to IN service logic located at the Service Control Point (SCP). The SCP can co-operate with several SSPs in different phases of call processing, from validation through call set-up to call termination. It can also control non-call services such as location updates. The Service Management Point (SMP) provides service management support and customer control capabilities for IN services. The SMP provides the functions needed to control and administer IN service features, service subscriber data and service configurations. In addition, the SMP allows the operators to tailor an IN service and its features to meet their individual needs. Intelligent networks typically include a service creation tool which allows the operator to quickly create novel services, taking advantage of pre-defined database structures based on standard data structure of the mobile networks, as explained previously in regard to CGI codes.

Service Management Interface (SMI) is typically a software-based interface between the service and subscriber databases in the IN and customer (i.e. service providers) management applications. SMI is typically a secured system including limited user rights, user IDs and passwords. Third party service providers can access SMI to install and update their own services. Service Management Access Point (SMAP) enables the mobile subscribers to view and update their own service information.

There has been developed several kind of location based services to mobile networks. For example, in GSM networks, there has been developed, with the support of intelligent networks, a concept of Localised GSM Services (LGS). LGS allows network operators and service providers to offer subscriber-specific tariffs and services in selected geographical areas. Mobile subscribers can have several Location Service Area (LSA) subscriptions, like "home zone" or "office zone", where the subscriber is entitled to reduced tariffs or special services.

Fig. 2 shows a simplified block diagram how LGS system architecture can be implemented. Fig. 2 shows a mobile station MS and four GSM

network cells, C1 - C4, which are served by base transceiver stations BTS1 - BTS4, respectively. Base stations BTS1 and BTS2 are controlled by base station controller BSC1 and base stations BTS3 and BTS4, in turn, by base station controller BSC2. Base station controllers BSC1 and BSC2 are connected to mobile switching centre (MSC), which is responsible for e.g. connection set-up and call routing. MSC is supported by two databases, which comprise mobile subscriber information: home location register (HLR), which comprises data of all subscribers of the mobile telephone network and the services they have subscribed, and visitor location register (VLR), which comprises data of all subscribers currently visiting the MSC. From the MSC there is a connection to Short Message Service Centre (SMSC), which provides short message services (SMS) needed in some LGS applications. In addition, there is a signalling connection from the MSC to IN Service Platform, which can be e.g. an IN system explained in Fig. 1. In regard to more specific description of GSM system a reference is made to ETSI/GSM specifications and to the book *The GSM system for Mobile Communications*, M. Mouly and M. Pautet, Palaiseau, France, 1992, ISBN:2-957190-07-7.

The operator of the GSM network can manage the Location Service Area definitions located in the SMP through Service Positioning System (SPS), which is typically a part of GSM Network Management System (NMS; shown in Fig. 1). A more detailed description of the SPS can be had from the patent application WO 99/12226. LSAs are defined on the basis of radio network coverage of the GSM network. Let us suppose that LSA1 is defined to cover cells C2 and C3 and the subscriber of the mobile station MS has made a LSA subscription to LSA1. Home location register HLR contains LSA subscription information of all subscribers in the network. When the mobile station MS arrives at the coverage area of LSA1, i.e. in cell C2 or C3, the GSM system triggers, in a manner known *per se*, the LGS applications located in the IN Service Platform. The IN comprises lists of all LSA subscriptions and more accurate information of tariffs and services, which will be applied to the MSs when in the area of their LSA. The IN, typically SCP, also informs the MS of arriving to the area of its LSA by sending a SMS or USSD (Unstructured Supplementary Service Data) message directly to the MS. The MS stores the LSA information into the memory of the mobile equipment or into the SIM-card (Subscriber Identity Module) connected to the MS and displays the LSA identification to the user of the MS. When the MS moves in the area of LSA1, the

base station controllers BSC1 and BSC2 are arranged to support the handover between the cells of the LSA1.

Fig. 3 shows a preferred embodiment of the invention. There is formed a bit mask of 14 bits, each bit corresponding to a digit of a CGI code. The bit mask enables to indicate which digits of a CGI code are relevant to a specific purpose. For example, the relevant digits of the CGI code can be indicated by setting the value of the corresponding bit as 1 and the irrelevant digits can be indicated by setting the value of the corresponding bit as 0, respectively. The bit values can naturally be defined *vice versa*. In Fig. 3 there is shown a reference CGI code and a bit mask attached thereto. In this example, a CGI code of 358f 40 1234 5678 is corresponded by a bit mask of 1111 11 1100 1111, consequently indicating that the last two digits of the LAC can have any value, but the other twelve digits of a CGI code must tally with the aforementioned CGI code. With the help of the bit mask, each digit can be separately defined as being relevant or irrelevant for some specific purpose. Irrelevant digits, represented by a wild card (i.e. bit value 0) does not necessarily have to be in the end of the CGI code, but any one of the digits can be defined irrelevant.

The previous example of the invention shows a preferred way of utilising bits or a bit mask to indicate the relevant digits. The information contained by bits is readily in computer-readable form, thus being a natural choice for facilitating the processing of location information. However, it is obvious that also any other symbols, like certain letters, numbers or special characters, could be used to indicate the relevancy of the location information digits.

The invention provides a flexible way for defining several irrelevant CGI code digits, which do not necessarily have to be in consecutive order. In many IN-based services, the data management inside the IN service platform requires handling of only a part of the CGI code, e.g. only LAC can be subject to changes, the rest of the CGI remaining the same. Also the signalling between the IN and the mobile network can be simplified in some cases by transferring only a part of a CGI code. These advantageous embodiments of the invention are illustrated by the way of the following examples.

The following examples are related to location information management in Mobile IN applications. Location lists containing information on different LSAs and LSA subscriptions of the mobile subscribers are stored in the SMP. The LSA definitions of the location lists can be updated internally by

the network operator, for example when the cell coverage of a LSA has been changed due to changes in radio network configurations. This can be done by the SPS operator, i.e. person responsible for the Service Positioning System (SPS). On the other hand, external system operators, i.e. the service providers, can update the LSA subscriptions of the mobile subscribers through the SMI. Depending on the service, LSA definitions can contain relevant location information regarding at least, but not limited to the following formats:

- the whole CGI code (MCC+MNC+LAC+CI)
- Location Area Code + Cell Identity (LAC+CI)
- Cell Identity (CI)
- Mobile Country Code + Mobile Network Code + Cell Identity (MCC+MNC+CI)
- Mobile Country Code + Mobile Network Code + Location Area Code (MCC+MNC+LAC)
- Location Area Code (LAC)
- Mobile Country Code + Mobile Network Code (MCC+MNC).

The SPS operator can create new location lists and update or delete the existing location lists. Location lists are also stored in the SPS database and whenever changes are made directly to the SMP, e.g. by an external system operator, the changes have to be updated in the SPS database, too. The invention provides a flexible tool for all tasks relating to location list management.

In the example of a preferred embodiment of the invention illustrated by Fig. 4, location lists have to be updated due to network configuration changes. New microcells with smaller coverage area are introduced into a regional area, which was previously covered by a dozen of larger cells belonging to two location areas with adjacent LAC numbers. Now over a dozen of new cells have to be included into network configurations. New location lists have to be created in the SPS and the relevant existing location lists have to be first transferred from the SMP to the SPS and then updated in the SPS. First, a reference CGI code (358f 40 1234 5555) is chosen and formed in the SPS in such way that all relevant information is included. Then a bit mask (1111 11 1110 1100) is attached to the reference CGI code showing the relevant and the irrelevant digits of the CGI code. Because the two location areas, which previously covered the regional area where new cells are now introduced, have adjacent LAC numbers only the last digit of the LAC can vary. The num-

ber of related cells is over ten and cells inside the two consecutive location areas can have adjacent CI numbers. Thus, all relevant cells are covered if the bit mask allows only the last two digits of the CI vary. The SPS sends a request to the SMP to deliver all location lists which include the location information defined by the reference CGI code and its bit mask. Finally, all relevant location lists according to the definition are transferred from the SMP to the SPS, where the existing lists are updated, new lists are created and said lists are transferred back from the SPS to the SMP. Theoretically, if BCD coded hexadecimal numbers are used, 4096 different combinations of the location information defined by the above-mentioned CGI code and the bit mask could be found in the SMP. In comparison with the prior known solutions, the request definition of the relevant location information should be made as 358f 40 123*, resulting in 1 048 576 different combinations in theory. Consequently, the invention provides considerable reduction in the amount of data to be transferred and processed.

Another example of a preferred embodiment of the invention is shown in Fig. 5. In future, it will be a requirement in some Mobile IN related Localised GSM Services that a LGS-attached mobile station must be sent cell information. The MS has to be aware of the identification of cells providing cell-specific services in order to check whether it is allowed to use the services. Also the LSA identification is normally displayed to the user of the MS. Transmitting of the cell information is typically done by a SCP, which sends a SMS or a USSD message containing the required cell information to the MS, which in turn stores the cell information in the memory of either the mobile equipment or the SIM card. According to the prior art, the transmitted cell information would contain the CGI code as such, because there are no means for separating only the end of the CGI code or defining the beginning of the CGI code irrelevant. In Fig. 5 the SCP receives MS location update information from the GSM network, when the MS enters a new cell in the SCP service area. The SCP receives the location information as a CGI code. The service logic in the SCP attaches a bit mask to the CGI, the bit mask being of form 0000 00 0000 1111. Thus, the bit mask defines only the CI part of the CGI code relevant. Then the SCP extracts the four CI part digits from the CGI code and includes them into a SMS or a USSD message to be sent to the MS. The MS receives the message and the cell information attached thereto. For displaying purposes, the cell information is first stored into the memory and then

displayed to the user of the MS. The cell information comprises only four digits instead of 14 digits, consequently reducing the memory consumption of the very limited memory of the mobile equipment or the SIM card.

The preferred embodiments of the invention described above are only examples of how the invention could be utilised. The invention can be carried out in any kind of processing of location information inside an intelligent network. It must be noted that the bit mask is advantageously not delivered outside the IN, but it is only used to facilitate the internal data processing of the IN. Despite of the previous examples explained in regard of a GSM network, it is clear that the invention can be implemented in any corresponding network. Consequently, the invention could be used in connection with, for example, a DCS (Digital Cellular System) network, a combination of GSM and DCS networks (so called dual-band network) or UMTS (Universal Mobile Telecommunication System) network. Although the invention is primarily meant to be implemented in connection with mobile communication systems, it is also possible that a terminal of a mobile communication system can be connected to a wired network, like PSTN or ISDN via a cable or wirelessly, the wired network being further connected to said IN. In that case the location information could be defined and delivered to the IN for further processing by the wired telephone system.

For a man skilled in the art it is obvious that in the course of technical progress, the basic idea of the invention can be carried out in numerous ways. Thus, the invention and its embodiments are not limited by the previous examples but they may vary within the scope of the appended claims.

Claims

1. A method for processing location information in an intelligent network system connected to a telecommunication system, especially to a mobile communication system, the location information being composed of digits, characterized by

attaching a symbol to each digit of the location information to indicate the relevancy of said digit for the processing purpose and

processing at least one digit of the location information indicated to be relevant according to predefined commands.

2. A method according to claim 1 , characterized by

forming a reference location information,

attaching a symbol to each digit of the reference location information, the symbols forming a symbol mask and the values of said symbols being defined by an operator of the intelligent network system and indicating the relevancy of the digits for processing the location information,

comparing location information comprised by said intelligent network to the symbol values of said symbol mask of the reference location information so that, as a response to said comparison, the location information is obtained wherein the digits indicated to be relevant by the symbol values of said symbol mask of the reference location information equal to corresponding digits of said reference location information and

processing said obtained location information according to predefined commands.

3. A method according to claim 2 , characterized by

removing the attached symbol mask from the location information prior to transmitting said location information from the intelligent network to said telecommunication system.

4. A method according to claim 2 or 3, characterized by

separating the relevant digits from the obtained location information for further processing.

5. A method according to claim 4, characterized by

transmitting said relevant digits from the intelligent network to a terminal of the telecommunication system.

6. A method according to any preceding claim, characterized by

said telecommunication system being a GSM system and said location information being a CGI code.

7. A method according to any preceding claim, c h a r a c t e r i z e d by

said method being implemented in connection with Localised GSM Services (LGS).

8. A method according to any preceding claim, c h a r a c t e r i z e d by

said symbols being presented by bits.

9. An intelligent network system comprising coupling means for linking the intelligent network system in connection with a telecommunication system, transmission means for transmitting location information between said intelligent network system and said telecommunication system, the location information being composed of digits, processing means for processing and modifying the location information into a form suitable for the intelligent network system, entering means for an operator of the intelligent network system to enter commands for processing the location information and storing means for storing the location information, c h a r a c t e r i z e d in that

said processing means are arranged to

attach a symbol to each digit of the location information to indicate the relevancy of said digit for the processing purpose and

process at least one digit of the location information indicated to be relevant according to predefined commands.

10. An intelligent network system according to claim 9, c h a r a c t e r i z e d in that

said processing means are arranged to

form a reference location information,

attach a symbol to each digit of the reference location information, the symbols forming a symbol mask and the value of said symbol being defined by said commands and indicating the relevancy of the digit for processing the location information,

compare location information comprised by said storing means to the symbol values of said symbol mask of the reference location information so that, as a response to said comparison, location information is obtained wherein the digits indicated to be relevant by the symbol values of said symbol

mask of the reference location information equal to corresponding digits of said reference location information and

process said obtained location information according to predefined commands.

11. An intelligent network system according to claim 10, characterized in that

said processing means or said transmitting means are arranged to remove the attached symbol mask from the location information prior to transmitting said location information from the intelligent network system to said telecommunication system.

12. An intelligent network system according to claim 10 or 11, characterized in that

said processing means are arranged to separate the relevant digits from the obtained location information for further processing.

13. An intelligent network system according to claim 12, characterized in that

said transmitting means are arranged to transmit said relevant digits from the intelligent network system to a terminal of the telecommunication system.

14. An intelligent network system according to any one of claims 9 - 13, characterized in that

said telecommunication system is a GSM system, and said location information is a CGI code.

15. An intelligent network system according to any one of claims 9 - 14, characterized in that

said intelligent network system supports the implementation of Localised GSM Services (LGS).

16. An intelligent network system according to any one of claims 9 - 15, characterized in that

said symbols are presented by bits.

(57) Abstract

An intelligent network system and a method for processing location information in an intelligent network system connected to a telecommunication system, which location information is composed of digits. A symbol mask is attached to the location information and the values of the symbols indicate the relevancy of each digit for processing the location information. The symbol mask is attached to a reference location information and other location information comprised by the intelligent network is compared to the symbol values of the symbol mask of the reference location information so that, responsive to the comparison, the location information is obtained wherein the digits indicated to be relevant by the symbol values of the symbol mask of the reference location information equal to corresponding digits of the reference location information. The obtained location information is processed according to predefined commands.

(Fig. 4)

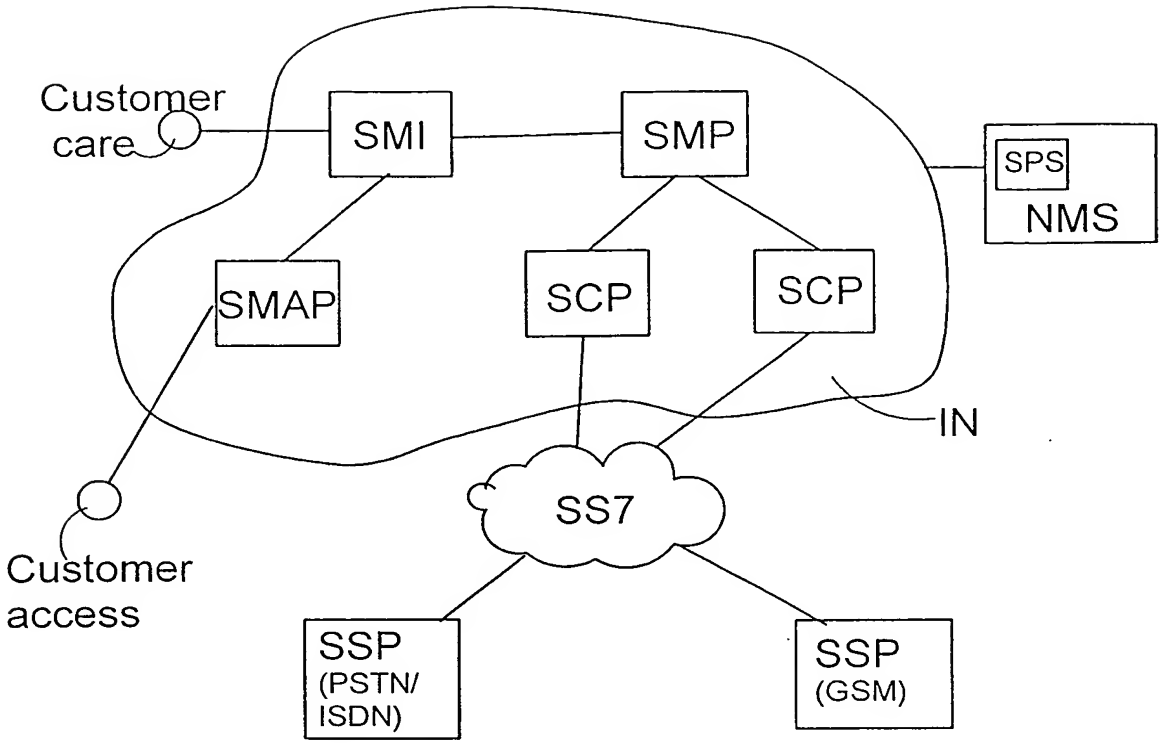

Customer care
SMI
SMP
SPS
NMS
SMAP
SCP
SCP
IN
SS7
Customer access
SSP (PSTN/ ISDN)
SSP (GSM)

FIG. 1

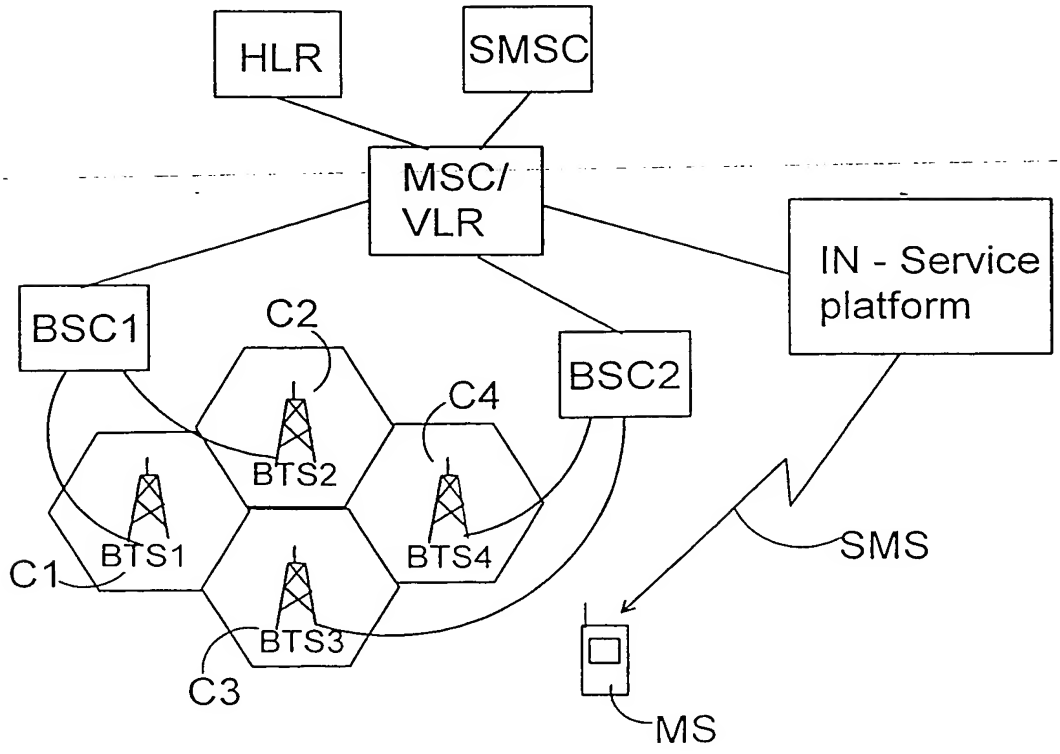

HLR
SMSC
MSC/ VLR
IN - Service platform
BSC1
C2
BSC2
C4
BTS2
BTS1
BTS4
C1
SMS
BTS3
C3
MS

FIG. 2

bit mask	1	1	1	1	1	1	1	1	0	0	1	1	1	1
ref. CGI	3	5	8	f	4	0	1	2	3	4	5	6	7	8

FIG. 3

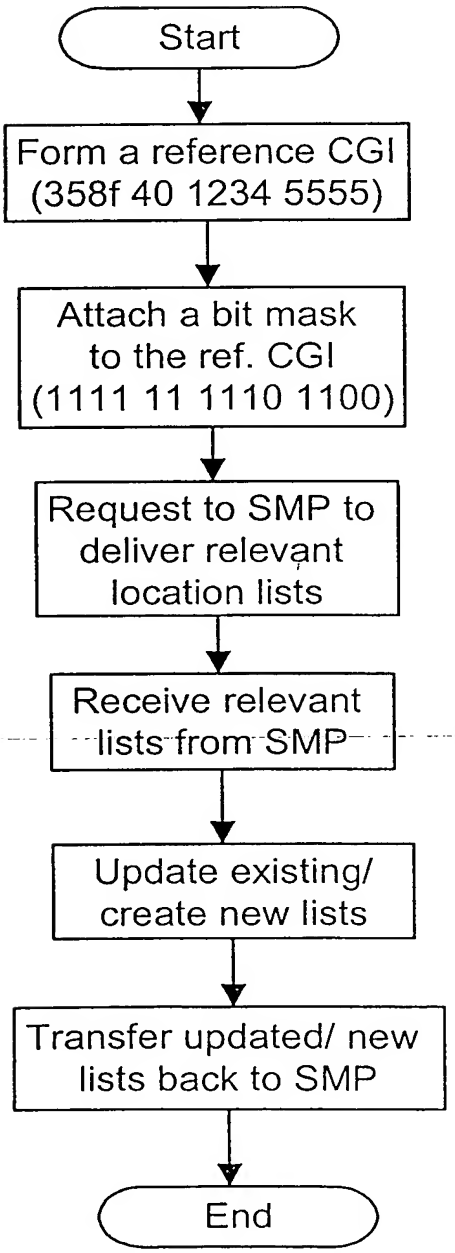


FIG. 4

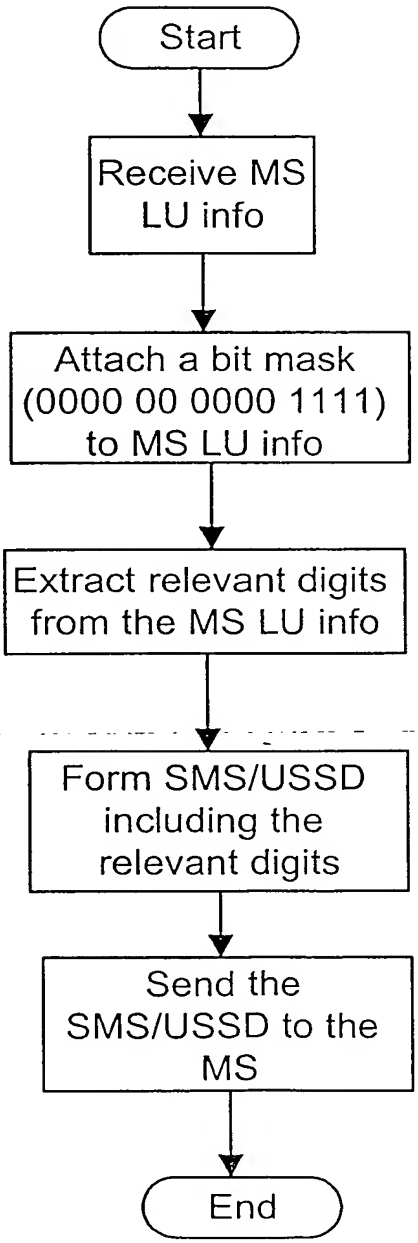


FIG. 5